Impact of Financial Leverage, Firm Performance on Systemetic Risks in Developing Countries: An Analysis on Vietnamese Listed Firm

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Abstract In this paper, we study the link between financial leverage, firm performance on the systemetic risks in developing countries, especially in the case of a developing country in Asia like Vietnam. Although there are many papers on this topic, the difference between them and this paper is that we have conducted the study in Vietnam that have not yet been studied together. The data used were collected from Ho Chi Minh City Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) in the period of 2013 – 2018. Based on the results of the panel data regression, the study can demonstrate that a firm used more current assets can positively impact on systemetic risk. Furthermore, a firm owned more performance can certainly decrease systemetic risk. Regarding firm size, and financial leverage, the results demonstrate that firm size, and financial leverage are insignificantly correlated with systematic risk.

Keywords: leverage, firm performance, systematic risk, panel data


1. Introduction

In the background of the economic development in each country, the stability of economic growth has greatly contributed on relieve of systematic risks and help the economy sustainabe development. In each country, the management of systemic risk is one of the issues paid attention to ensure the stability and sustainability of the overall financial system in general and the stability market for every firm in the country in particular. The Capital Asset Pricing Model (CAPM) of Sharpe [1] and Lintner [2] has significantly contributed more attention in managing systematic risks and financial market development.

Vietnam has greatly achieved rapid economic growth to be a socialist-oriented market economy in connection to a lower middle-income country. Real GDP growth rate increased by 7.10% during 1990 to 2018, in which, foreign direct investment firms have been identified as an important energy of financing for a developing country like Vietnam. It enhances economic growth and growth model reform [3]. According to the census, there were more than 700,000 businesses operating in Vietnam so far this now, up 100,000 new businesses each year since 2016. However, large companies accounted for roughly 2 percent of the total and 98 percent of its total from SMEs. Up to date, there are approximately 10,000 large firms.

It is evident that the determinants of the systematic risk has been widely discussed in a large number of studies across the globe and has frequently inspired academics to find a number of empirical studies in both developing countries and developed countries. Indeed, finding factors that influence systematic risk has been at the center of the relevant previous studies [4,5,6,7]. In which, Sharp [1] has boardly developed the model based on Capital Asset Pricing Model (CAPM) which describes the linkage between systematic risk and expected return for assets, particularly stocks, as the key factors to develop other studies in recent years.

In this study, proposing an approach to apply in Vietnam in order to estimate systematic risk (the beta) in a CAPM. The paper focuses on one of the fastest growing economies in Asia, named Vietnam. The general objective of the study is to examine the determinants of systematic risk, in particular by other prime factors such as financial leverage, firm performance, and other control factor as liquidity, firm size in the Vietnamese listed companies over the 2013 – 2018 period and based on the approach of fixed effects method (FEM) and random effects method (REM), and pooled ordinary least squares (pooled OLS). Therefore, the main aim of this study is to examine what most important factors that impact on systematic risk. The importance of the paper is to provide to the researchers, policy makers and Vietnamese government in general, and investors in particular.

The rest of the paper is organized as follows: Section 2 presents the literature review. Section 3 discusses the data collection, research model and methodology as well as the estimation techniques. Further, Section 4 presents the
results and discussion. Section 5 gives the main conclusion.

2. Literature Review

In recent years, there has been a very large number of studies which study the correlation between financial leverage, firm performance on the systemic risks in developing countries. In the theory in macroeconomics, there are many types of risk, but it is easy to understand that systematic and unsystematic risk can be focused. Basically, unsystematic risk is firm specific or industry/sector specific risk. This is risk in relation to the specific attribution of an individual investment or a specific group in the economic environment. In fact, this is not associated with returns of stock market. In contrast, systematic risk is as a risk consistent with market returns, and can be attributed to broad factors. With systematic risk, it is described that a portfolio in investment cannot be impacted by the specific risk of individual investments. Further, some reasons of systematic risk may be generated by almost macroeconomic factors as economic growth, inflation, shocks in interest rates, shocks in currencies, recessions, conflicts and wars, etc. Macro factors which affect direction and fluctuation of whole market could be by almost macroeconomic factors as economic growth, inflation, shocks in interest rates, shocks in currencies, recessions, conflicts and wars, etc. Macro factors which affect direction and fluctuation of whole market could be systemic risk. An individual company, a firm, a specific based sector cannot release systematic risk.

To evaluate systematic risk, Sharp [1] has constructed the model based on Capital Asset Pricing Model (CAPM) which describes the linkage between systematic risk and expected return for assets, particularly stocks. CAPM is widely used throughout finance for pricing risky securities and generating expected returns for assets given the risk of those assets and cost of capital.

The formula for calculating the expected return of an asset given its risk is as follows:

\[ R_s = R_f + \text{risk premium} \]

This fundamental equation follows from the proposition that only systematic risk, measured by beta (\( \beta \)), matters.

\[ R_s = R_f + \beta_s (R_m - R_f) \]

where:
- \( R_s \) = the stock’s expected return (and the company’s cost of equity capital).
- \( R_f \) = the risk-free rate.
- \( \beta_s \) = the expected return on the stock market as a whole.
- \( \beta_s \) = the stock’s beta.

This model was also developed by Markowitz [8]. In which, the coefficient of beta of a potential investment is a measure of how much risk the investment will add to a portfolio that looks like the market. If a stock is riskier than the market, it will have a beta greater than one. If a stock has a beta of less than one, the formula assumes it will reduce the risk of a portfolio.

To discuss about systematic risk, the Efficient Market Hypothesis, or EMH can be focused as the fundamental theory for investment, is the hypothesis in financial economics that describes that prices of asset could reflect all available information. EMH further indicates that a stock normally trades at a fair value on the stock exchanges, it is significantly impossible for investors or traders to either exchanged undervalued stocks or in the inflated prices.

The determinants of the systematic risks has been widely discussed in developing and developed countries as well as countries in transition. The main hypothesis of this paper is to establish the link between financial leverage, firm performance on the systemic risk in the case of Vietnamese listed companies. More specifically, a large number of empirical studies have confirmed this relationship [4,5,6,7].

In the study on Norway’s economy, Yang et al. [4] describes that Norway was the country to force some regulations for board of management of publicly traded firms, especially regulation for gender rate. The study has further expanded the previous debate on endogeneity problem, and applying the approach of difference-in-difference to discuss the effects of its regulation on performance of firm. For the control group, those are firms from other neighboring countries such as Finland, Sweden, and particularly in Denmark. The results indicate a negative impact of representation of mandated female on firm performance as well as on firm risk.

Sensoy [9] conduct on a study in the emerging market and especially based on the argument that the institutional ownership can generate systematic risk in liquidity via robustness of liquidity commonality. Using a various database in emerging stock markets, the study describes that a new source of systematic risk in liquidity for a singular group of companies can be found. Further, commonality can decrease with generating number of investors at the level of any size of firm; indicating that as the investor base significantly becomes larger, views of market stakeholders can become more complex, which can entirely provide an alternative way to decline the systematic risk in liquidity.

Muijsson and Satchell [5] conduct on a study on Australian bank – a developed country in Oceanian. According to the study, the study has a link between systematic risk and factors of balance sheet and recognize the dependencies in covariance structure. Consequently, funding structure, and factors of balance sheet significantly affect systematic risk in Australian banks.

In respect to Huh [7] in a study about the determinants of systematic risks, the very suitable indicators are representative for systematic risk could be easily found by adding daily returns on a large range of total assets into network of bottleneck. Additionally, the study has a comparison of performance between this analysis and the previous models based on the sample of S & P 100 components. As a result, it is much worthy to confirm that it can create the performance as best comparably estimated models can do.

As shown by Beltrame et al. [6] who has a study in commercial banks in Europe, using a data between 2005 and 2016 and covering on 11 European countries. The data is retrieved from 97 listed banks in the region. In this paper, the study does three adjustments in leverage for doctoring the impact of provisioning and incorporating as well as the impact of non-performing loans (NPLs) and total exposure of credit risk. In addition to control for size of bank, results describe that the combination of leverage, and asset quality is known as a component of systematic...
risk. The coefficient of NPLs is found to be a significant factor of market risk. Results also indicate that leverage is pointless in the process to verify a financial riskiness in a bank.

3. Data Sources and Methodology

3.1. Data Sources

The study has focused on the secondary data in the period of 2013 – 2018. The data is collected from Ho Chi Minh City Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) and over 60 companies. The data of a firm is retrieved from balance sheet, income statement, and cash flow statement. As a result, HOSE and HNX have frequently published the financial data of every firm on there. In order to evaluate return on the stock Rs, firstly, we collect data for Vietnam 10-year bond yield and representative cash flow statement. As a result, HOSE and HNX have return on the market Rm is based on the data of a Minh City Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) and over 60 companies. The data of a firm is retrieved from balance sheet, income statement, and cash flow statement. As a result, HOSE and HNX have frequently published the financial data of every firm on there.

3.2. Methodology

Financial leverage, firm performance on systematic risks has been focused in numerous of developing countries. Followed by the studies of and other empirical studies, we have:

\[ Y = C_0 + C_1 X_1 + C_2 X_2 + C_3 X_3 + C_4 X_4 + \varepsilon \]  

\[ SR_{i,t} = C_0 + C_1 LIQ_{i,t} + C_2 FLE_{i,t} + C_3 ROA_{i,t-1} + C_4 SIZE_{i,t} + \varepsilon \]  

4. Results and Discussion

4.1. Descriptive Statistics

Table 2 indicates the descriptive statistics of variables used in the study in terms of number of observations, mean, standard deviation, minimum, and maximum values. This analysis is based on panel data, including time-series data and cross-sectional data. The results describe that, the level of liquidity of Vietnamese firms is fluctuated between 0.15 and 7.82 but the average liquidity is roughly 1.76, it is evident that a large number of firms are available to ensure liquidity in operation. In addition to financial leverage, firm performance measured by return on assets is roughly 6% on average, however, there exists some firms with negative performance.

Regarding financial leverage in the capital structure, firms are supported by 53% debt and 47% equity. The data further said that some firms are entirely donated by shareholders’ capital. In this study, a large number of firms are small-medium sized.

4.2. Correlation Analysis

In this study, we analyze based on three techniques, which are discussed on the studies of Yang (2019); Muijsson and Satchell (2019); Beltrame et al. (2018); Huh (2019). In conclusion, multicollinearity can take part in the study when two or more predictors are significantly consistent in the model. It is further discussed that VIF is used for multicollinearity test, if VIF value is excess of 10, a problem with multicollinearity cannot be found. In addition, detection of multi-collinearity can be found if the correlation coefficient is 0.8 and more, serious multicollinearity may be appeared if absolute value of pairwise correlations among independent variables may be high.

Table 3 describes about the correlation matrix in the model, we see that all correlation coefficients between independent variables are less than 0.8. It is evident that the multi-collinearity cannot be present.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIQ</td>
<td>300</td>
<td>1.76</td>
<td>1.02</td>
<td>0.15</td>
<td>7.82</td>
</tr>
<tr>
<td>FLE</td>
<td>300</td>
<td>0.53</td>
<td>0.18</td>
<td>0.03</td>
<td>0.92</td>
</tr>
<tr>
<td>ROA</td>
<td>300</td>
<td>0.06</td>
<td>0.02</td>
<td>-0.16</td>
<td>0.32</td>
</tr>
<tr>
<td>SIZE</td>
<td>300</td>
<td>5.55</td>
<td>3.85</td>
<td>4.92</td>
<td>7.53</td>
</tr>
</tbody>
</table>

Source: Calculated by the author.

<table>
<thead>
<tr>
<th>SR</th>
<th>LIQ</th>
<th>FLE</th>
<th>ROA</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.420</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.173</td>
<td>-0.118</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.235</td>
<td>0.178</td>
<td>-0.352</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>0.498</td>
<td>-0.124</td>
<td>0.362</td>
<td>-0.081</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: Calculated by the author.

<table>
<thead>
<tr>
<th>Table 1: Measurement of Variables Used in the Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variables</td>
</tr>
<tr>
<td>Systematic Risk</td>
</tr>
<tr>
<td>Liquidty</td>
</tr>
<tr>
<td>Financial Leverage</td>
</tr>
<tr>
<td>Firm Performance</td>
</tr>
<tr>
<td>Firm Size</td>
</tr>
</tbody>
</table>

Where

\[ i, t \] denote for a firm i and at the time of year t

\[ SR_{i,t} \] = so-call systematic risk of firm i at the time t, by The Capital Asset Pricing Model (CAPM) of Sharpe [1] and Lintner [2], we can denote the variable of systematic system by using \( \beta \) (the beta) in a CAPM.

\[ LIQ_{i,t} \] = the liquidity of firm i at the time t, is measured by the quotient of current assets to short term debt. The expected sign is positive or negative, dependent on the specific situation.

\[ FLE_{i,t} \] = the financial leverage of firm i at the time t, is calculated by the quotient of total debt at the time t to total assets at the time t. This proxy was exactly used by Beltrame et al. [6] conduct on a study on European countries and Muijsson and Satchell [5] in the case of Australian banking system. The expected sign is flexible. Chun and Ramasamy [10] found a negative effect in Malaysia.

\[ ROA_{i,t-1} \] = the profitability of firm i at the time t, is calculated by the quotient of earnings after tax at the time t to total assets at the time t. The expected sign is negative. As shown by Nguyen [11], firm performance can be denoted by ROA, if not, ROE is also a choice.

\[ SIZE_{i,t} \] = the size of firm i at the time t, is measured by the natural logarithm of total assets at the time t. A proxy that is used in the studies of Beltrame et al. [6]. The expected sign is also negative.

\( \varepsilon \) = a vector of errors term.
4.3. Estimation Model

4.3.1. Discussion about Estimation Approach

Followed by the models of Yang [4]; Muijssen and Satchell [5]; Beltrame et al. [6]; Huh [7], Tandelilin [12], and Chun and Ramasamy (1989), the estimation model can be estimated based on either Fixed-effect model (FEM) or Random-effects model (REM), especially by pooled ordinary least squares (pooled OLS). However, Wooldridge [13] demonstrated that pooled OLS should be employed in the situation if the study can select a different sample for each period of the panel dataset. In contrast, in the case of the same sample of entity, we should follow REM or FEM.

Regarding FEM, which is more preferred if individual specific effect is significantly related to independent variables. It assumes that there is a true effect size which underlines studies, and differences in observed effects can occur because of sampling error. Further, REM is more preferred if the true effect can significantly fluctuate from this study to another study. Generally, effect size could be either higher or lower in studies. Because of difference in the mixes of participants and the implementations of interventions, and other reasons, it is consistent to indicate that there might be different effect sizes underlying different analyses.

In order to select either FEM or REM used in the study, Hausman tests have been applied in order to select the best model. In addition, the select model is FEM if Pro>Chi2, otherwise is REM, the hypothesis as follows:

H0: The null hypothesis - the preferred model is random effects (REM)
Ha: The alternate hypothesis - the model is fixed effects (FEM).

4.4. Estimation Results

Table 4 presents the results of the relationship of financial leverage, firm performance on systematic risks in the case of Vietnam. Results are:

<table>
<thead>
<tr>
<th>Variable</th>
<th>OLS</th>
<th>REM</th>
<th>FEM</th>
<th>FEM (correction)</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.953</td>
<td>0.825</td>
<td>0.733</td>
<td>0.733</td>
<td></td>
</tr>
<tr>
<td>LIQ</td>
<td>0.033</td>
<td>0.030</td>
<td>0.031</td>
<td>0.031*</td>
<td>1.12</td>
</tr>
<tr>
<td>FLE</td>
<td>-0.234</td>
<td>-0.431</td>
<td>0.230</td>
<td>0.230</td>
<td>1.21</td>
</tr>
<tr>
<td>ROA</td>
<td>-1.764***</td>
<td>-1.444***</td>
<td>-1.267***</td>
<td>-1.267***</td>
<td>1.02</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.462***</td>
<td>0.362***</td>
<td>-0.456***</td>
<td>-0.456</td>
<td>1.08</td>
</tr>
<tr>
<td>F test</td>
<td>22.58***</td>
<td>2.12*</td>
<td>44.68***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald (χ²)</td>
<td>42.62***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LM (χ²)</td>
<td>105.20***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hausman</td>
<td>16.88***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified</td>
<td>1760.02***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wooldridge</td>
<td>1.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: ***, *** significance at 1% level, at 5% level, and at 10% level.

Breusch-Pagan Lagrangian test have statistical meaning, that is, the study should follow random effect or pooled estimation. From the test, the Pooled OLS is worse than the others. To select either FEM or REM, Hausman tests should be used, from that test, the study can choose either a fixed effects model or a random effects model. As a result, we find that REM is the suitable model.

Followed by FEM model with the explanatory variable of systematic risks, the study describes that the coefficients of LIQ, and ROA are statistically significant. Further, a positive impact from liquidity on systematic risks can be found while a negative impact for firm performance. In addition to financial leverage, and firm size, no impact can be found in this study because coefficients of FLE, and SIZE are insignificant. The following regression result is given as below:

\[ SR_{it} = 0.733 + 0.031 LIQ_{it} + 0.230 FLE_{it} - 1.267 ROA_{it} - 0.456 SIZE_{it} + \epsilon. \]  

4.5. Interpretation of the Results

From the results, indicating that the determinants of systematic risks in the listed companies in Vietnam can be found in terms of some evidence, as follows:

Firstly, liquidity has a significant and positive impact on the systematic risk of Vietnamese listed firms. It means that the higher ability of liquidity, which is measured by a higher level of the quotient of current assets to short term debt could significantly inspired the systematic risk. In general, a firm used more current assets can positively affect systematic risk. It is evident that a firm with a larger current assets has to operate more efficient their current assets in order to generate more profit and narrow systematic risk in the financial market. It is in line with Tandelilin [12] in Indonesian stocks market. Indonesia is an emerging economy in Asia, Indonesian company in this country could be supported so as to diversify and upgrade before relieving systematic risks in the process of operation.

Secondly, a firm with more performance has a negative and significant impact on the systematic risk. It can be explained that a higher profitability of a firm can decrease systematic risk. In fact, a firm with a higher profitability has continually generated in the wake of a higher level of economic development and business environment. For this reason, investors and shareholder can predominantly believe in expansion of business and start up because less systematic risk is in relation to less cost of capital. This evidence is in line with Tandelilin [12]. Further, Chun and Ramasamy [10] also found the same evidence in Malaysia, namely Kuala Lumpur Stock Exchange (KLSE). Chun and Ramasamy [10] confirmed that financial factors in the balance sheet, such as profitability, effectiveness are very important determinants of systematic risk of a common stock.

Regarding firm size, and financial leverage and its impact on systematic risk, the study demonstrates that firm size, and financial leverage are insignificantly associated with systematic risk. Specifically, finding about firm size in this study is not in line with Tandelilin [12] in Indonesia. This is called by scope of economies in a firm, it is evident to recognize that a larger firm might obviously have a lower cost of bankruptcy and generate a higher level of performance and less risk. Further, financial leverage cannot be found any impact on
systematic risk, this is not correlated with Chun and Ramasamy [10] with a negative link.

5. Conclusion

The determinants of the systematic risk has been widely discussed in a large number of studies across the globe. In general, systematic risk normally refers to the risk inherent to the whole market or a market segment. In some situations, systematic risk has been also known as undiversifiable risk which can impact on overall market, not just a specific firm or industry. In recent years, there has been a very large number of papers which study the correlation between financial leverage, firm performance and systemic risks. However, there is a very significant difference between the results obtained in these different papers.

A firm always thinks about using debt in its capital structure in order to make more robustness of tax shield benefits into firm value. The finding obtained from the study is described that a firm used more current assets can positively affect systematic risk. Further, a firm owned a higher profitability can decrease systematic risk. Regarding firm size, and financial leverage and its impact on systematic risk, the results demonstrate that firm size, and financial leverage are insignificantly correlated with systematic risk. It means that the scope of economies in a firm could not be found, a larger firm might not perfectly have a lower cost of bankruptcy and generate a higher level of performance and less risk.

References